

B.) AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions, and listings of claims in the Application.

1. (Previously Presented) A dental x-ray diagnostic apparatus for performing real-time digital radiography in Cephalography of a patient skull, the apparatus comprising:

a base frame arrangement;

a rotary frame coupled to the base frame arrangement, the rotary frame supporting an x-ray source;

a cinematic unit connecting the rotary frame and the base frame arrangement, the cinematic unit being configured to execute roto-translational movements of the rotary frame, wherein the roto-translational movements comprise one rotation movement and two transverse linear movements in a horizontal plane, and the roto-translational movements of the rotary frame being driven by independent actuators in the cinematic unit controlled by data supplied from a microcomputer;

an x-ray imager disposed in a Cephalographic position, the x-ray imager being movable during a scanning operation by an independent actuator; and

wherein the roto-translational movements of the cinematic unit permit the rotary frame to perform a roto-translating scanning trajectory to permit illumination of the patient skull by the x-ray source from a predefined virtual center of irradiation.

2. (Previously Presented) The apparatus as set forth in claim 3 wherein the second x-ray imager has an active area of a size approximately equivalent to a radiographic film.

3. (Previously Presented) An apparatus as in claim 1, further comprising a second x-ray imager, the second x-ray imager being supported by the rotary frame and disposed opposite the x-ray source in a Panoramic position.

4. (Previously Presented) The apparatus as set forth in claim 1 wherein the predefined virtual

center of irradiation is located at the focal point of the x-ray source.

5. (Previously Presented) The apparatus as set forth in claim 1 wherein said x-ray imager is associated with a horizontal scanning movement, and has a linearly shaped active area oriented vertically with a height substantially greater than a width.
6. (Previously Presented) The apparatus as set forth in claim 1 wherein said x-ray imager is associated with a horizontal scanning movement, and is linearly translated during a scanning movement by computer control of the independent actuator for the x-ray imager.
7. (Previously Presented) The apparatus as set forth in claim 1 wherein said x-ray imager is associated with a vertical scanning movement, and has a linearly shaped active area oriented horizontally with a width substantially greater than a height.
8. (Previously Presented) The apparatus as set forth in claim 1 wherein said x-ray imager is associated with a rotational scanning movement, and has a linearly shaped active area for use with a narrow x-ray beam.
9. (Previously Presented) The apparatus as set forth in claim 1 wherein said x-ray imager is associated with a vertical, or horizontal, or rotational scanning movement, and an x-ray beam is collimated by a collimator intercepting the x-ray beam before a patient and in proximity of the patient, which is provided with an independent active actuator capable of performing the linear or rotational translation of the collimator during a scanning movement under computer control.
10. (Previously presented) The apparatus as set forth in claim 1, comprising a collimator operated by independent active actuators under microcomputer control, allowing resizing of an x-ray field to any desired format required for a chosen radiographic modality as well as a translation of the x-ray field during a vertical or horizontal or rotational scanning process.

11. (Previously Presented) The apparatus as set forth in claim 1 wherein a mechanism is given providing relocation of said x-ray imager selectively between a Cephalographic and a Panoramic position.

12. (Original) The apparatus as set forth in claim 11 wherein such mechanism comprises a telescopic arm providing relocation either manually or automatically by an independent actuator under microcomputer control upon user command.

13. (Original) The apparatus as set forth in claim 11 wherein such mechanism comprises a folding arm providing relocation either manually or automatically by an independent actuator under microcomputer control upon user command.

14. (Original) The apparatus as set forth in claim 11 wherein such mechanism comprises a detachable connector allowing in a secure and ergonomic way the manual connection and disconnection of the x-ray imager selectively between the Cephalographic and the Panoramic position.

15. (Previously presented) The apparatus as set forth in claim 1 wherein a patient positioning system used in Cephalography is provided with independent active actuators by which the patient positioning system can be translated relative to a corresponding support frame in order to maintain a firm patient position during a horizontal or vertical scanning process where a movement of the support frame is involved.

16. (Previously Presented) A method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in Cephalography, comprising the steps of:
positioning a patient by a patient positioning system;
irradiating a patient skull from a predefined virtual center of irradiation of an x-ray source during a roto-translational movement of a rotary frame supporting the x-ray source and a linear movement of an x-ray imager positioned in a Cephalographic position;

performing acquisition of image data by the x-ray imager and digital processing of the image data for reconstruction of a diagnostic image; and

wherein the roto-translational movements of the rotary frame include one rotational movement and two transverse linear movements in a horizontal plane, and the roto-translational movements of the rotary frame being driven by independent actuators in the cinematic unit controlled by data supplied from a microcomputer.

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Previously Presented) A method for operating a dental x-ray diagnostic apparatus performing real-time digital radiography in cephalography, comprising the steps of:

aligning an x-ray source with an x-ray imager, either manually or automatically;

positioning a patient by a patient positioning system;

setting a collimator to provide a narrow x-ray beam;

starting a scanning process during which the x-ray beam is rotationally translated about a horizontal axis through a patient skull by a coordinated rotational movement of the collimator and the x-ray imager under computer control, while the x-ray source is fixed in position; and

performing acquisition of image data by the x-ray imager, and computer processing for reconstruction of a diagnostic image.